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CLAIMS

1. A workpiece inspection system comprising a machine tool which has a controller operable to perform a workpiece producing process and a workpiece inspection process, the inspection process including a method for synchronising varying data relating to measurements of the workpiece from a measurement device with varying data relating to machine position from the machine tool, comprising in any suitable order the steps of:
 mounting the measurement device on the machine tool;

changing the position of the workpiece relative to the measurement device;

causing measurements of the workpiece to be taken by the measurement device;

issuing synchronisation signals defining a plurality of instants;

recording a first set of the varying data relating
to the position of the machine at least at some of the
instants; and

recording a second set of the varying data from the measurement device relating to measurements of the workpiece at least at some of the instants.

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- 2. A workpiece inspection system as claimed in claim 1 wherein the synchronisation signal issues from the controller.
- 30 3. A workpiece inspection system as claimed in claim
 1 wherein the synchronisation signal is used to
 identify the real time at which at least some of the
 members of the first and second sets of data from the
 machine tool and measurement device were recorded in

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order that the position data and the measurement data can be combined with a related real time.

4. A workpiece inspection system as claimed in claim
1 wherein the measurement device is monitored at
intervals which are more frequent than the occurrences
of the said intervals and only selected data is
recorded to the second set and/or the data is
manipulated prior to its recording.

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- 5. A workpiece inspection system as claimed in claim
 1 wherein the system further includes software for
 combining the data of the first and second sets and,
 when combined, for influencing the workpiece producing
 process performed at the controller of the machine
 tool.
- A workpiece inspection system as claimed in any one preceding claim wherein the system further includes
 an interface circuit which accepts the synchronisation signal and the varying data from the measurement device.
- 7. A workpiece inspection system as claimed in claim
 1 wherein the system includes a stop signal path from
 the measurement device to the machine controller and
 the machine controller stops the machine if a stop
 signal is received by the machine controller.
- 30 8. A workpiece inspection system as claimed in claim 1 wherein the measurement device is a contact type dimensional measurement probe and the varying data relates to changes in the deflection of a workpiece contact stylus connected to the probe.

9. A workpiece inspection system as claimed in claim 5 wherein the first set of data is corrected to at least reduce positional errors of the machine tool, prior to combination with the second set.

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- 10. A workpiece inspection system as claimed in claim 1 wherein the first and/or second sets of data are manipulated such that the manipulated data represents approximately the data which would have been obtained had the two sets been recorded at the same time.
- 11. A workpiece inspection system as claimed in claim 1 wherein the controller issues a further signal which enables the recording of the second set.

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- 12. Software for controlling a workpiece inspection system according to the steps claimed in claim 1.
- 13. A workpiece inspection system comprising a machine
 20 tool having a first part, a second part movable
 relative to the first part, and a controller operable
 to perform both a workpiece production process and a
 workpiece inspection process and for producing varying
 data relating to the relative position of the first and
 25 second parts, the system comprising also a workpiece
 measurement device attached to the second machine part
 for producing varying data relating to measurements of
 the workpiece and a synchronisation signal producer,
 the system being operable such that the following
 30 workpiece inspection steps are performed:

mounting the measurement device on the second part of the machine tool;

changing the position of the workpiece relative to the measurement device;

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causing measurements of the workpiece to be taken by the measurement device;

issuing synchronisation signals defining a plurality of instants;

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recording a first set of the varying data relating to the relative position of the first and second parts of the machine at least at some of the instants; and

recording a second set of the varying data from the measurement device relating to measurements of the workpiece at least at some of the instants.